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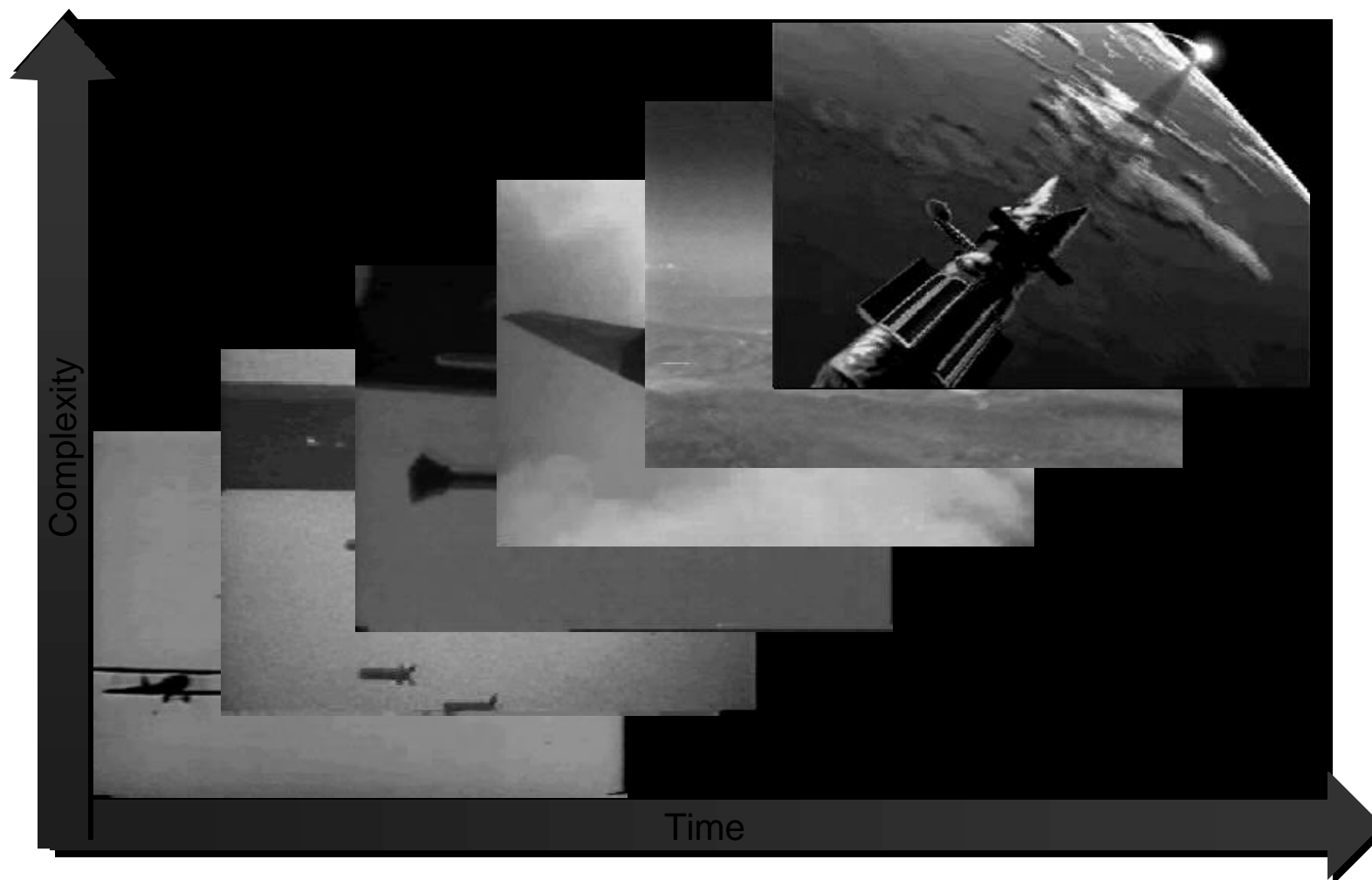
MUNITION TECHNOLOGY DRIVERS



Col. Thomas “Mas” Masiello
Director, Munitions Directorate
Air Force Research Laboratory



Munitions Technology Evolution of Visions





R & D Muniton Core Competencies



- **Guidance**

- **Warheads**

- **Assessment & Integration**



Computational
Mechanics



Lethality & Vulnerability



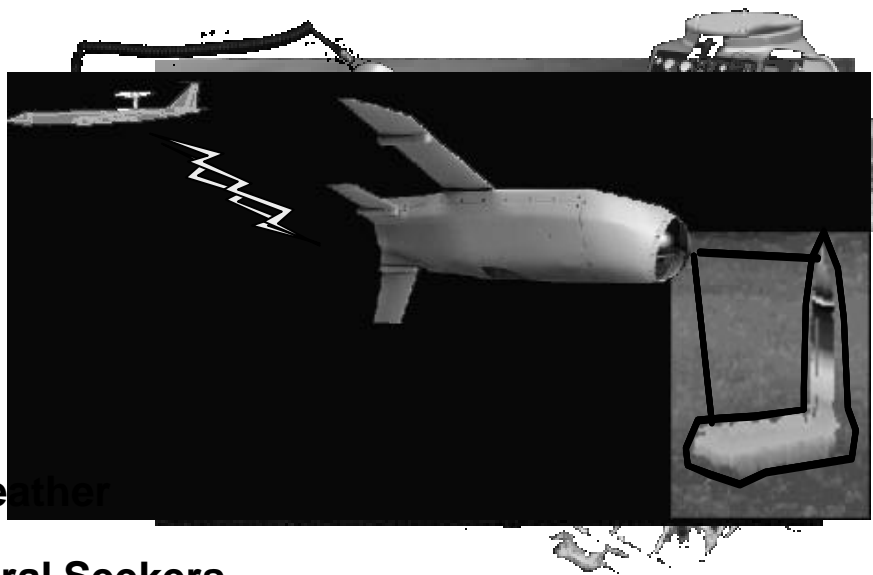
Flight Vehicles
Integration



R & D Munition Technology Drivers

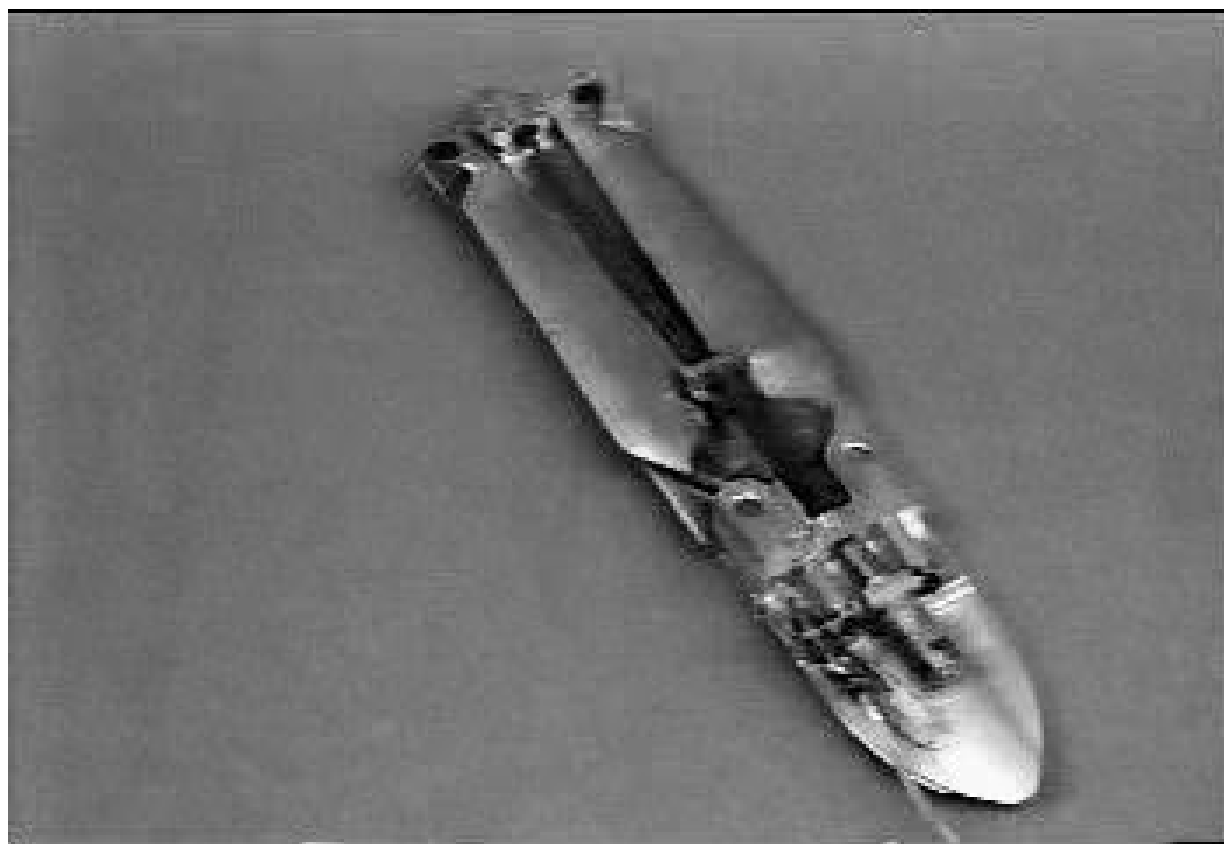


- Standoff
 - Hi Energy Density Fuels
 - High Lift over Drag
 - Light Weight Composites
- Munition Deployed BDA
 - Information Grid
 - Weapon Sensor Web
- Agent Defeat
 - Directed Energy
 - Neutralizing Explosive Fill
- Precision Engagement in All Weather
 - Secure INS/GPS
 - LADAR & SAR / Hyperspectral Seekers
- Focused Lethality & Higher Energy Materials
 - Nano Particles
 - Intelligent Fuzing
 - Mass Focus Lethality
- Autonomous / Linked to Information Grid
 - ATR
 - Wireless Communications & Information Backbone Infrastructure
 - C² Data Fusion





Standoff



EXTENDED RANGE KIT



Standoff





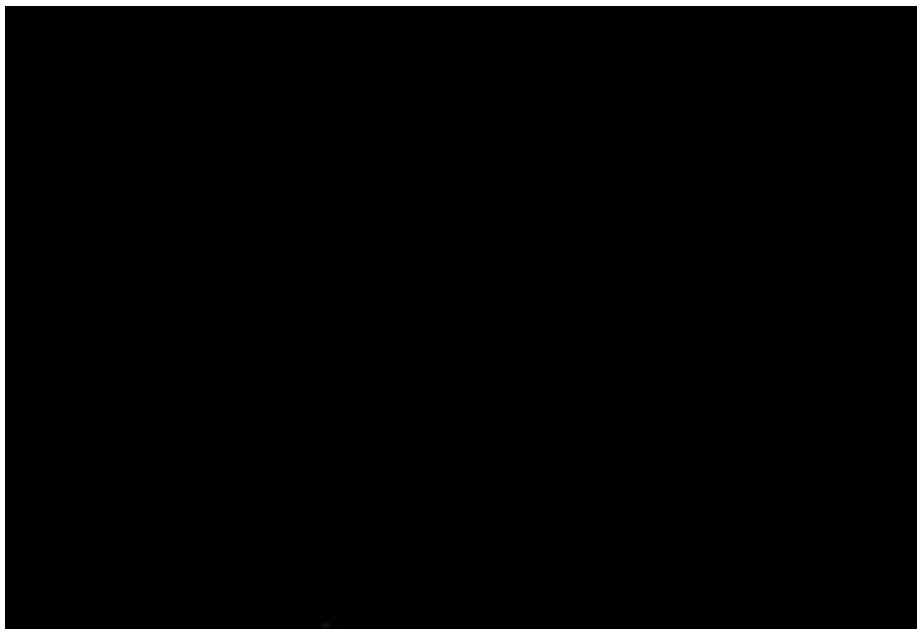
Standoff



Extended Range JDAM Test



Munitions Deployed BDA



Flight Imagery



Slow Motion Impact



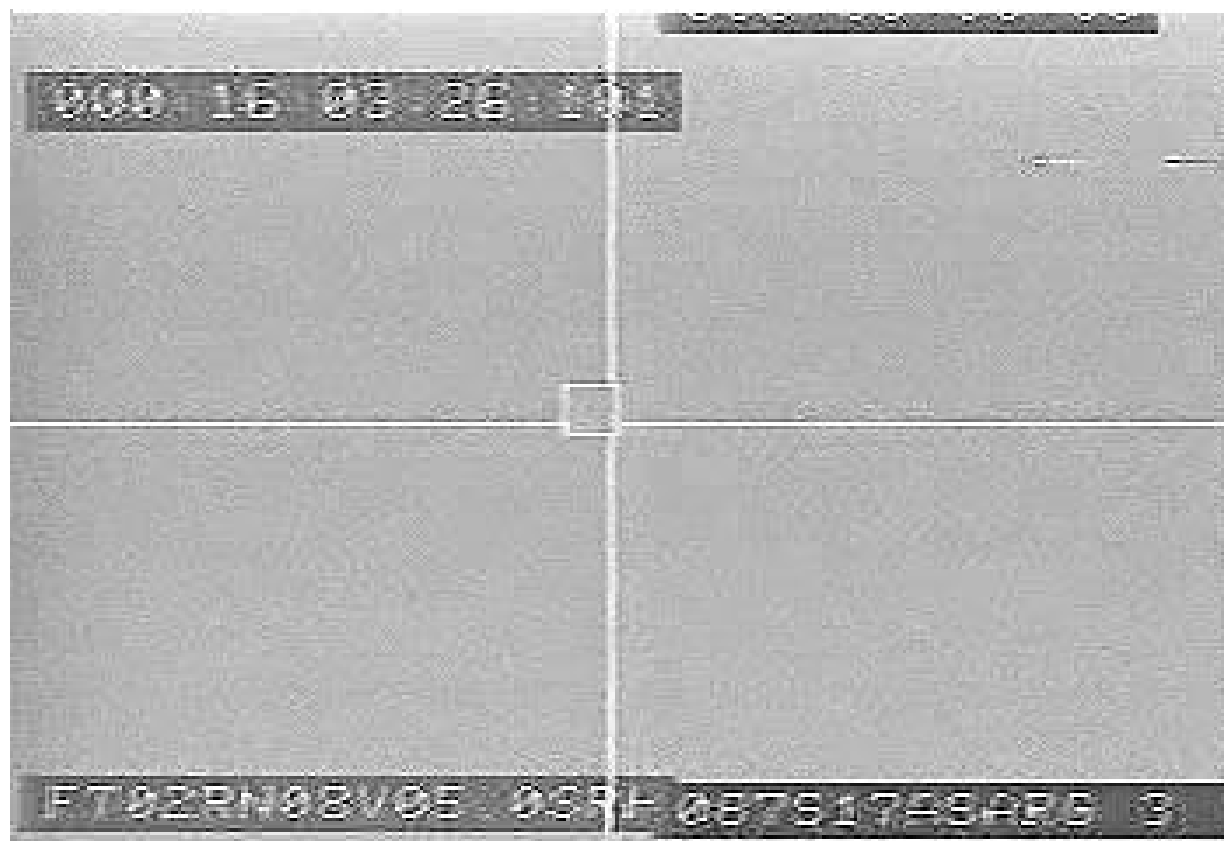
Agent Defeat



HTI Warhead Shot



Precision Engagement in All Weather



SAR Seeker Captive Carry Test



Focused Lethality & Higher Energy Materials



PIOS Warhead Shot



Focused Lethality & Higher Energy Materials



SSB Flight Test



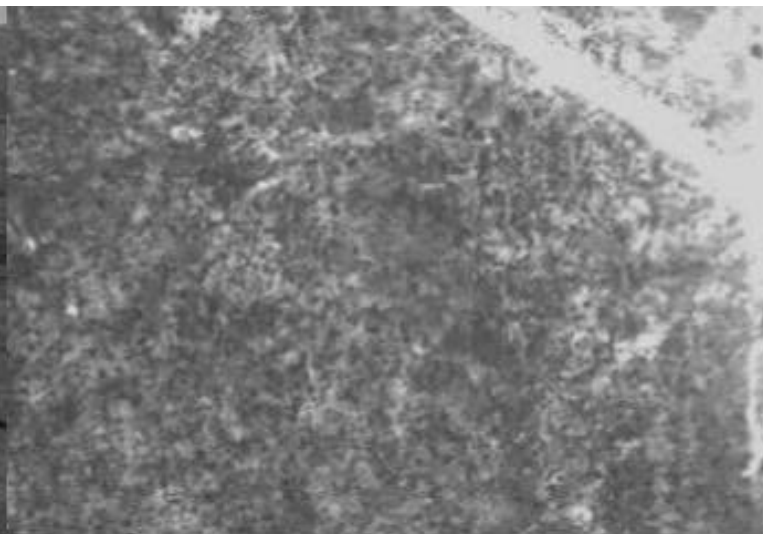
Autonomous / Linked to Information Grid



LOCAAS Drop Test



KHILS Simulation



**Actual Video from Camera
Mounted in Place of
Warhead**



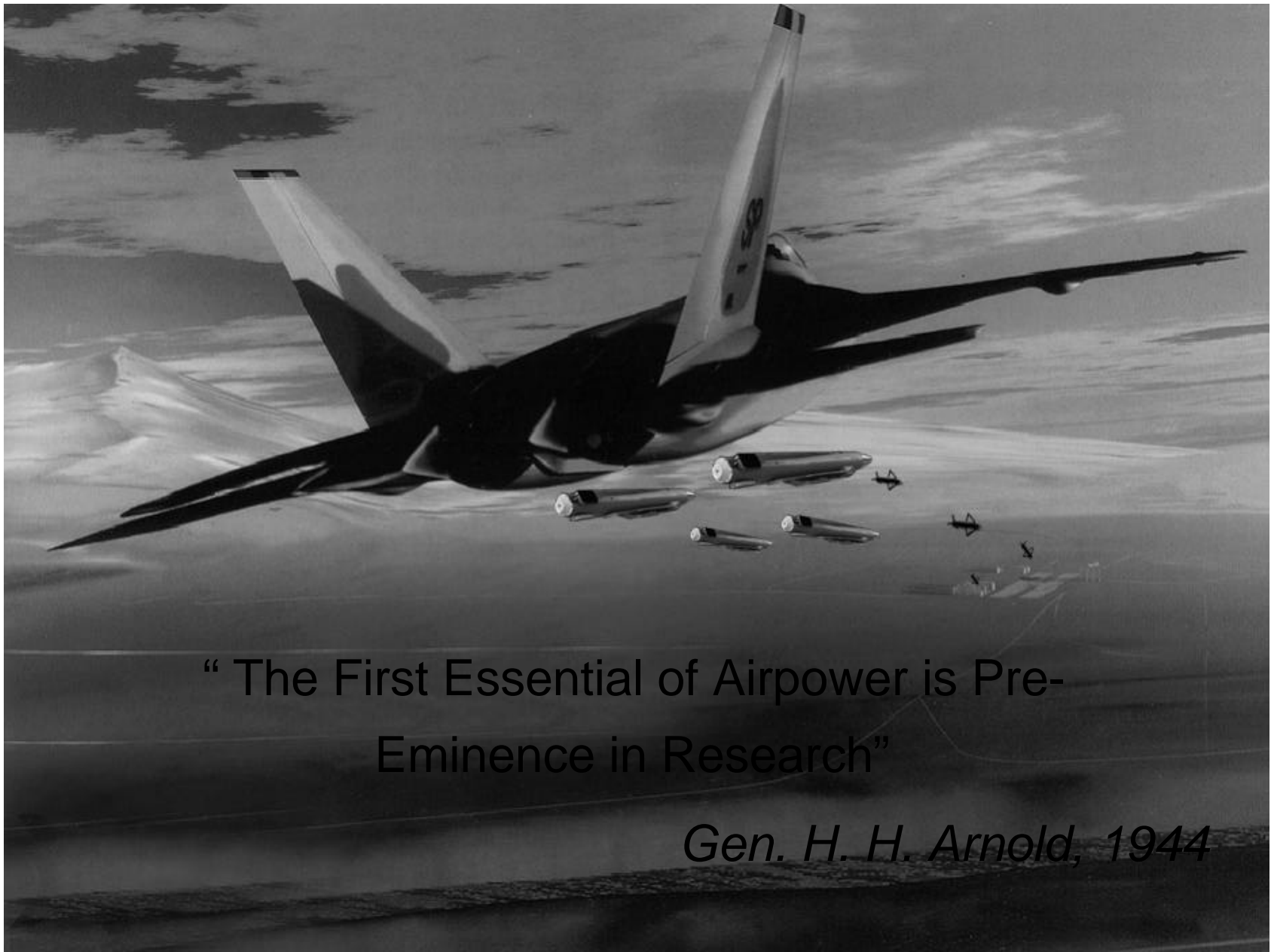
Summary Focus



Enable Revolutionary AEF Concept

- Reduced Logistics Tail
- Decrease Timeline to Halt / Defeat Invading Armies
- Reduce Collateral Damage
- Increased Battlefield Situational Awareness
- Reduce Exposure to Harms Way
- Hit Targets Anytime, Anywhere



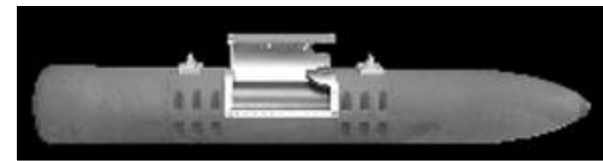
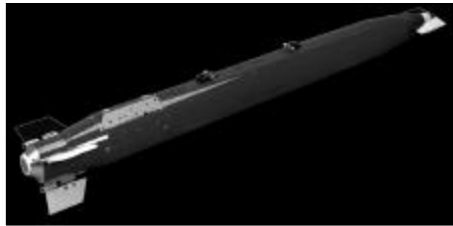
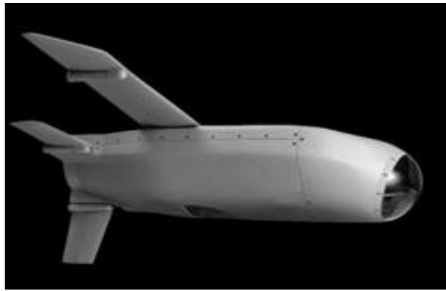


“ The First Essential of Airpower is Pre-
Eminence in Research”

Gen. H. H. Arnold, 1944

MISSION:

***DEVELOP, INTEGRATE, AND
TRANSITION SCIENCE AND
TECHNOLOGY FOR AIR-LAUNCHED
MUNITIONS FOR DEFEATING GROUND
FIXED, MOBILE/RELOCATABLE, AIR,
AND SPACE TARGETS TO ASSURE
THE PRE-EMINENCE OF U.S. AIR AND
SPACE FORCES.***



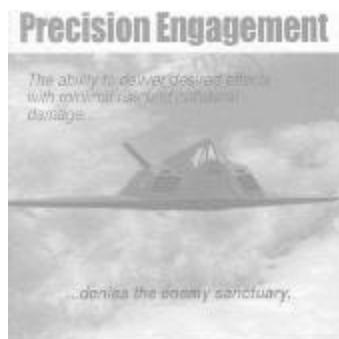


MUNITIONS DIRECTORATE SUMMARY



- **“Develop and Field The Critical Future Capabilities to Sustain Our Core Competencies”**

- **“Capitalize More Fully on a Set of Revolutionary Technologies...highly Precise All-Weather Munitions”**



- **“Precise Weapons From Very Large to Very Small, Will Be Able to Strike Effectively Wherever and Whenever Necessary, With Minimal Collateral Damage”**



FOCUSED LETHALITY & HIGHER ENERGY MATERIALS



MULTIMODE WARHEAD SHOT